

**A Process for Signalling Cost Information upon  
Connection Establishment and a Tariff Server Therefor**

*Background of the Invention*

The invention is based on a process for signalling cost information upon connection establishment in a telecommunications network and to a tariff server therefor according to the preambles of the independent claims.

5 So-called call handling in the exchange is known. The call handling process is very limited as it does not take the individual subscribers into account but merely determines the tariff rate globally according to criteria relating to time, date, distance and service used. However, this process permits the display of the costs on a charge meter  
10 during the telephone connection.

15 Superimposed on the conventional communications network for circuit-switched connections is a so-called intelligent network (IN) with the aid of which, over and beyond the pure connection establishment, a number of other services can be provided. To use a specific service of this intelligent network, it is firstly necessary to dial a service code. The service code is necessary to reach a so-called service switching point (SSP) which switches the required service on the basis of the service code as so-called service transfer point (STP), then approaches a service control computer, the so-called service control point (SCP) which then controls the provision of the requested service. The SSP is the interface between the conventional communications network and the intelligent  
25 network. STP and SCP are components of the intelligent network. A general description of an intelligent network  
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is to be found in the book "Intelligente Netze"  
(Intelligent Networks) by G. Siegmund, 1999, p. 31 ff.

A signalling network, which at the present time normally operates using Signalling System No. 7 of ITU-T, is also linked to or superimposed upon the conventional communication network. This signalling system and the associated signalling network are generally known under the abbreviation #7. This signalling system is also used in the intelligent network. The above mentioned service transfer point (STP) of the intelligent network here is identical to the identically abbreviated signalling transfer point (STP) of the signalling network #7. An advantage of the possible services in an intelligent network is the provision of individual bills relating to the costs of the connections. At the end of an IN connection, a call record containing all the important data for this call is created by the SSP and STP. These records are sent to the service management point (SMP), which, in addition to the statistics function, determines the charge information therefrom. In the SMP the reported results of the call or service can be linked with the charge metering by the service provider in order to produce a billing ticket therefrom.

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The structure of the specific charge metering for different telephone services constitutes a key point for the network operators. The cost structures for connections are a fundamental means of distinguishing and differentiating  
30 between the various service providers. The currently existing methods of determining and displaying costs are unsatisfactory. They cannot provide the relevant customer with information until after a connection has ended.

## Summary of the Invention

35 Therefore the object of the present invention is to propose  
a process which enables the subscriber in a

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Upon a connection establishment between the data terminal 1  
of the subscriber and the exchange 2, the call handling  
function 6 receives the requested connection data. The  
call handling function makes an enquiry to the tariff  
server 4 about the tariff for the desired connection in a  
tariff enquiry 10. In the tariff server the charging rate  
determination function 13 requests the desired tariff  
information in a database 14. Information about the

subscriber and the subscriber's specific tariff conditions  
 are stored in this database. Via the charging rate  
 determination function 13 of the tariff server 4 the tariff  
 server answers the enquiry from the call handling function  
 5 6 with a tariff response 11. The call handling function 6  
 forwards the tariff response 11 to the CDR generator 7 and  
 the cost communication function 8 of the exchange 2. This  
 cost communication function 8 sends the information  
 directly to the subscriber's data terminal 1 via a  
 10 signalling channel 15. In this way the tariff for the  
 desired connection is communicated to the subscriber  
 actually prior to the connection establishment. The  
 information is also updated during an existing connection.  
 The CDR generator 7 determines the units already consumed  
 15 in the current connection. The CDR generator 7 is also  
 connected to a bill server 5. In this bill server 5 the  
 CDR units are collected, processed on the basis of the  
 current tariff, and possibly intermediately stored. The  
 information relating to the accrued units is forwarded to  
 20 the tariff server 4 via a so-called hot billing channel 12.  
 This information ensures that the current costs are  
 available to the subscriber in the database. The current  
 costs are then forwarded to the exchanges and to the  
 subscriber by means of the tariff enquiry and tariff  
 25 response.

The tariff server 4 also has various access facilities 9.  
 Via a service centre 9 the service provider can access the  
 tariff server 4 and adapt the current subscribers and their  
 current tariffs. An access facility for a personal enquiry  
 about current personal tariffs is also available to the  
 subscriber in the telecommunications network. This current  
 enquiry can be made using the data terminal or via the  
 internet using a PC.

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